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09/920,635	08/03/2001	Peter J. Janssen	US010347	6071

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,635

Applicant(s)

JANSSEN ET AL.

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Drawings

1. The corrected drawings were received and approved on 08-07-03. This drawing is Figure 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 7, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (Admitted Prior Art) in view of Haruhiko (JP No. 07-199866) and further in view Keeney et al. (PUB. No.: US 2002/0113766 A1).

As to claim 1, APA teaches a liquid crystal display (LCD) device (See Fig. 1, item 100, in description See paragraph 003), comprising: a plurality of pixels arranged in a matrix of row and columns, each pixel including, a pixel switching device having first and second terminals and control terminal (See Fig. 1, items 110,120,150,112, in description See paragraph 004), and a storage device connected to the first terminal of the pixel switching device (See Fig. 1, items 112, 114, in description See paragraph 005); a plurality of data lines connected to the second terminals of the pixel switching device; a plurality of data drivers connected to the data lines and providing image data to the data lines (See Fig. 1, items 110,120,130,112, in description See paragraph 004); a plurality of scanning lines connected to the control terminals of the pixel switching devices for selectively connecting the first and second terminals of the pixel switching

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devices to provide the image data to the storage device (See Fig.1, items 110,150,160,112, in description See paragraphs 004-005).

APA does not show at least one switch responsive to a corresponding control signal to selectively connect two of data lines to each other-such that image data applied by a data driver is simultaneously applied to at least two data lines.

Haruhiko teaches at least one switch responsive to a corresponding control signal to selectively connect two of data lines to each other (connecting switches are turned on in period when image signal is not inputted to signal lines) (See Drawings 1,3, items 1-1, 5, 2-1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025). It would have been obvious to one of ordinary skill in the art at the time of invention to implement column lines connection as shown by Haruhiko in the APA apparatus in order to selectively connect two of the data lines to each other.

APA and Haruhiko do not show image data applied by a data driver is simultaneously applied to at least two data lines.

Keeney et al. teaches to repair inoperative pixels by multiplexing and applying one driver to pixels in two different lines, so data driver is simultaneously applied to at least two data lines (See Fig. 2, items 34,44, in description See paragraph 0040).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the method of repairing inoperative pixels as shown by Keeney et al. in the APA and Haruhiko method to apply Keeney et al. method to inoperative columns in order to repair a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claim 16, APA teaches an image display device (See Fig. 1, item 100, in description See paragraph 003), comprising: a plurality of pixels arranged in a matrix (See Fig.1, items 110,120,150,112, in description See paragraph 004), a plurality of column lines connected to the pixels (See Fig.1, items 110,120,130,112, in description See paragraph 004); a plurality of column drivers connected to the column lines and providing data to the pixels (See Fig.1, items 110,120,130,112, in description See paragraph 004).

APA does not show means for selectively connect two column lines to each other.

Haruhiko teaches at least one switch responsive to a corresponding control signal to selectively connect two of data lines to each other (connecting switches are turned on in period when image signal is not inputted to signal lines) (See Drawings 1,3, items 1-1, 5, 2-1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025). It would have been obvious to one of ordinary skill in the art at the time of invention to implement column lines connection as shown by Haruhiko in the APA apparatus in order to selectively connect two of the column lines to each other.

APA and Haruhiko do not show image data applied by a data driver is simultaneously applied to at least two data lines.

Keeney et al. teaches to repair inoperative pixels by multiplexing and applying one driver to pixels in two different lines, so data driver is simultaneously applied to at least two data lines (See Fig. 2, items 34,44, in description See paragraph 0040).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the method of repairing inoperative pixels as shown by Keeney et al. in the APA and

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Haruhiko apparatus to apply Keeney et al. method to inoperative columns in order to repair a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claims 2,17, Haruhiko teaches at least one switch responsive to a corresponding control signal to selectively connect two of data lines to each other (connecting switches are turned on in period when image signal is not inputted to signal lines) (See Drawing 1, items 1-1, 5, 2-1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025).

As to claims 3,7, APA and Haruhiko do not teach a register corresponding to each cross-column switch and providing the control signal for the cross-column switch.

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on (See Fig. 2, items 34,44, in description See paragraph 0040). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the APA and Haruhiko apparatus in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claim 18, APA and Haruhiko do not teach a plurality of registers each corresponding to one of the switches and storing a data value indicating whether the corresponding switch should be opened or closed.

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on (See Fig. 2, items 34,44, in description See paragraph 0040). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the

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APA and Haruhiko apparatus in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claim 19, Haruhiko teaches a cross-column switch extending between two column lines selectively connected to each other (See Drawings 1,3, items 1-1, 5, 2-1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025).

3. Claims 4-6, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA, Haruhiko and Keeney et al. as aforementioned in claims 1,17 in view of Lee et al. (US Patent No. 6,028,442).

As to claims 4,20, APA, Haruhiko and Keeney et al. do not show a common test line and at least one switch comprises a column test switch extending between a corresponding one of the data lines and the common line.

Lee et al. teaches a common test line and at least one switch comprises a column test switch extending between a corresponding one of the data lines and the common line See Fig. 5, items T1-T3, D1-D6, in description See Col. 3, Lines 13-24). It would have been obvious to one of ordinary skill in the art at the time of invention to use common test line as shown by Lee et al. in the APA, Haruhiko and Keeney et al. apparatus in order use effectively LCD substrate space (See Col. 2, Lines 8-15 in the Lee et al. reference).

As to claim 6, APA, Haruhiko and Keeney et al. do not show a common test line and at least one switch comprises a column test switch extending between a corresponding one of the data lines and the common line.

Lee et al. teaches a common test line and at least one switch comprises a column test switch extending between a corresponding one of the data lines and the common line See Fig. 5, items T1-T3, D1-D6, in description See Col. 3, Lines 13-24). It would have been obvious to one of ordinary skill in the art at the time of invention to use common test line as shown by Lee et al. in the APA, Haruhiko and Keeney et al. apparatus in order use effectively LCD substrate space (See Col. 2, Lines 8-15 in the Lee et al. reference).

APA, Haruhiko, Keeney et al. and Lee do not show a plurality of common pair selection switches each connected between a pair of the column test switches and the common test line.

Lee et al. teaches of grouping pair of data lines connected to the first pad. It would have been obvious to one of ordinary skill in the art at the time of invention to use pair of data lines as shown by Lee et al. to modify the APA and Haruhiko, , Keeney et al., Lee et al. apparatus to implement a plurality of common pair selection switches each connected between a pair of the column test switches and the common test line in order use effectively LCD substrate space (See Col. 2, Lines 8-15 in the Lee et al. reference).

As to claim 5, APA, Haruhiko and Lee et al. do not teach a register corresponding to each cross-column switch and providing the control signal for the cross-column switch.

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on (See Fig. 2, items 34,44, in description See paragraph 0040). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the APA,

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Haruhiko and Lee et al. apparatus in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

4. Claim 8-11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley (US Patent No. 5,459,410) in view of Haruhiko and further in view of Keeney et al.

As to claim 8, Henley teaches a method of repairing a defect in a liquid crystal display (LCD) device including a plurality of pixels arranged in a matrix of rows and columns (See Fig. 1, items 11, 13, 15, in description See Col. 4, Lines 49-65), a plurality of column lines connected to the plurality of pixels (See Fig. 1, items 13, 11, in description See Col. 4, Lines 49-65), the method comprising: identifying a defective column in the LCD device, the defective column including a first one of the column lines (See Fig. 2, 7, items 37, 29, 12i-12l, in description See Col. 2, Lines 29-34, Col. 8, Line 63-67, Col. 9, Lines 38-42).

Henley does not show a plurality of column drivers connected to the column lines and providing data to the pixels, and a plurality of switches each responsible to a corresponding control signal to selectively connect two columns lines to each other, connecting at least one pixel of the defective column to a second one of the column lines for a second one of the column in the LCD device.

Haruhiko teaches a plurality of column drivers connected to the column lines and providing data to the pixels (See Draw. 1, item 10, in description See page 3, paragraph 0016), and a plurality of switches each responsible to a corresponding control signal to selectively connect two columns lines to each other (See Drawings 1,3, items 1-1, 5, 2-1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025). It would have been

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obvious to one of ordinary skill in the art at the time of invention to implement column lines connection as shown by Haruhiko in the Henley apparatus to connect at least one pixel of the defective column to a second one of the column lines for a second one of the columns in the LCD device in order satisfy the need for the apparatus for repairing panels (See Col. 2, Lines 4-12 in the Henley reference).

Henley and Haruhiko do not show applying a control signal to selectively close a switch such that image data applied to the second column line is applied to the at least one pixel.

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on and by multiplexing and applying one driver to pixels in two different lines, so that image data applied to the second column line is applied to the at least one pixel (See Fig. 2, items 34,44, in description See paragraph 0040).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the Henley and Haruhiko apparatus such that image data applied to the second column line is applied to the at least one pixel in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claims 9,11, Henley does not show connecting the at least one pixel of the defective column to the second one of the column lines comprises closing a first one of the switches connected to the defective column.

Haruhiko teaches a plurality of switches each responsible to a corresponding control signal to selectively connect two columns lines to each other (See Drawings 1,3, items 1-1, 5, 2-

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1, in description See page 2, paragraph 0008, page 3, paragraph 0017, page 4, paragraph 0025).

It would have been obvious to one of ordinary skill in the art at the time of invention to implement column lines connection as shown by Haruhiko in the Henley apparatus to connect at least one pixel of the defective column to a second one of the column lines for a second one of the columns in the LCD device in order satisfy the need for the apparatus for repairing panels (See Col. 2, Lines 4-12 in the Henley reference).

As to claim 13, Henley teaches identifying the defective column comprises identifying the portion of the first column line which is not connected to any of the column drivers (See Fig. 7, items 12i-12l, in description See Col. 9, lines 37-42).

As to claim 14, Henley and Haruhiko do not show to identifying the defective column driver.

Henley teaches to identify the defective column comprises identifying the portion of the first column line which is not connected to any of the column drivers (See Fig. 7, items 12i-12l, in description See Col. 9, lines 37-42) and high resolution of Henley inspection system (See Col. 2, Lines 30-38), it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Haruhiko and Henley apparatus to detect defective column driver in order satisfy the need for the apparatus for repairing panels (See Col. 2, Lines 4-12 in the Henley reference).

As to claim 10, Henley and Haruhiko do not teach a plurality of registers connected to the plurality of switches, the method further comprising storing a data value in one of the registers connected to the first switch to provide a control signal to close the first switch..

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on (See Fig. 2, items 34,44, in description See paragraph 0040). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the Henley and Haruhiko apparatus storing a data value in one of the registers connected to the first switch to provide a control signal to close the first switch in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

As to claim 15, Henley and Haruhiko do not teach a plurality of column driver switches each connected to one of the column lines and to one of the column drivers, and a plurality of registers each connected to control terminals of the column driver switches, storing a data value in one of the registers connected to a first one of the column driver switches to provide a control signal to close the first column driver switch.

Keeney et al. teaches to control additional circuitry and set up bypass bit, which could be loaded from external memory (registers) after the display is turned on (See Fig. 2, items 34,44, in description See paragraph 0040). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the register control as shown by Keeney et al. in the Henley and Haruhiko apparatus storing a data value in one of the registers connected a plurality of column driver switches each connected to one of the column lines and to one of the column drivers, and a plurality of registers each connected to control terminals of the column driver switches, storing a data value in one of the registers connected to a first one of the column driver switches to provide a control signal in order to repair inoperative pixels in a display without requiring redundant circuitry (See paragraph 0007 in Keeney et al. reference).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henley, Haruhiko and Keeney et al. as aforementioned in claims 8 in view of Lee et al.

Henley, Haruhiko and Keeney et al. do not show closing a first and second of the switches connected to the defective column and common test line.

Lee et al. teaches a common test line and at least one switch comprises a column test switch extending between a corresponding one of the data lines and the common line See Fig. 5, items T1-T3, D1-D6, in description See Col. 3, Lines 13-24). It would have been obvious to one of ordinary skill in the art at the time of invention to use common test line as shown by Lee et al. in the Henley, Haruhiko and Keeney et al. apparatus to close a first or/and second of the switches connected to the defective column and common test line in order use effectively LCD substrate space (See Col. 2, Lines 8-15 in the Lee et al. reference).

Response to Amendment

6. Applicant's arguments filed on 08-07-03 with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

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